

PONERINE ANTS OF THE GENUS EUPONERA IN
THE UNITED STATES

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During the spring of 1932, when Mr. H. T. Vanderford of the United States Department of Agriculture, Bureau of Entomology, was engaged in scouting for the Argentine ant at Decatur, Ga. (a suburb of Atlanta), he collected specimens of a ponerine ant from three adjacent blocks in that city. To my surprise these ants proved to be *Euponera solitaria*, a species described by F. Smith from Japanese specimens. This is the third species of *Euponera* to be recorded for this country and adds another ant to the list of insects which have reached the United States from other countries.

The literature dealing with these ants is scattered, and in recording the presence of *Euponera solitaria* in the United States it seems advisable to treat the other species of the genus.

The first species of *Euponera* recorded for the United States was *E. gilva*, which was described by J. Roger in 1863. Unfortunately, Roger failed to state where his type specimens were collected, simply indicating their locality as "Nord Amerika." This species was known only from the type specimens until Dr. F. M. Gaige found four worker specimens at Camden, Tenn., in 1919. Since that date W. S. Creighton, C. H. Kennedy, and I have taken the ants in several localities in Alabama, Tennessee, and Mississippi, respectively. At this time it is one of our best known forms of *Euponera*.

Euponera stigma occurs in Florida and is also widely distributed in South America, Central America, Mexico, Puerto Rico, the Bahamas, and elsewhere. The first specimens recorded for the United States were collected at Lake Worth (Palm Beach County), Fla., several years ago by Jerome Schmitt. On February 19, 1932, D. E. Read collected the same species at Avon Park (Highlands County) in the same State. *E. stigma*, like *E. gilva*, is assumed to be native to the

United States and may also occur in Texas or some of the Southwestern States.

There seems to be little doubt that *E. solitaria* has been imported, but the method of its introduction is a matter for conjecture. In examining literature on this ant I noted one instance where the species had been intercepted in Hamburg, Germany, in a shipment of plants, *Prunus* sp., from Japan. The widespread distribution of *E. solitaria* in this country was most surprising to me, the ants having been found by Mr. Vanderford not only in Georgia but also at a number of localities in North Carolina and Virginia.

E. gilva and *E. stigma* are members of the subgenus *Trachymesopus*, the workers and females of which are characterized by the presence of stiff hairs or bristles on the metatarsi of their mesothoracic legs. *E. solitaria*, on the other hand, belongs to the subgenus *Brachyponera*, whose workers and females are distinguished not only by the lack of metatarsal bristles on their mesothoracic legs, but also by the presence of a strongly protuberant mesonotum, which is completely encircled and set off by a distinct suture.

Since the worker is the most common caste of these ants, no effort has been made to include accounts of the male or female. The following discussion includes a key to the species, descriptions, and biological notes.

KEY TO SPECIES OF EUPONERA KNOWN TO OCCUR IN THE UNITED STATES

(For the identification of the workers)

1. With well developed compound eyes; mesonotum protuberant, encircled by a deeply impressed suture, which distinctly sets it apart from the rest of the thorax; metatarsi of middle legs without stiff hairs or bristles on their anterior surfaces (extensor surfaces),

E. (Brachyponera) solitaria

With poorly developed, ommatidialike eyes; mesonotum not protuberant, surrounding suture not deeply impressed; middle legs short, their metatarsi furnished with stiff hairs or bristles on their anterior surfaces (extensor surfaces)..... 2

2. Length, 3 to 3.4 mm.; color varying from light to dark ferruginous; antennal scapes lacking a distance greater than their widest diameter at the tip of attaining the median section of the posterior border of the head; pleurae of mesothorax not distinctly striated,

E. (Trachymesopus) gilva

Length, 4.5 to 4.75 mm.; color very dark brown to black; antennal scapes attaining the median section of the posterior border of the head; pleurae of the mesothorax and metathorax distinctly striated,

E. (Trachymesopus) stigma

***Euponera (Brachyponera) solitaria* (F. Smith)**

Ponera solitaria Smith. Trans. Ent. Soc. Lond., 1874, p. 404, worker; Forel, Bull. Soc. Ent. Suisse 10, 1900, pp. 267, 284, worker, queen; Mayr, Verh. Zool.-Bot. Ges. Wien 36, 1886, p. 363.

Euponera (Brachyponera) solitaria Emery. Ann. Soc. Ent. Belg. 45, 1901, p. 47; Emery, Deutsche Ent. Zeitschr., 1909, p. 366, Fig. 6, worker, queen; Emery, Genera Insect., Ponerinae, 1910, p. 84; Wheeler, Bull. Amer. Mus. Nat. Hist. 22, 1906, p. 306, Pl. 41, Fig. 13, worker.

Worker—Length, 3.36 to 3.55 mm. Head, excluding mandibles, somewhat longer than broad, with moderately convex sides and almost straight posterior border. Eyes rather large, elliptical, placed about

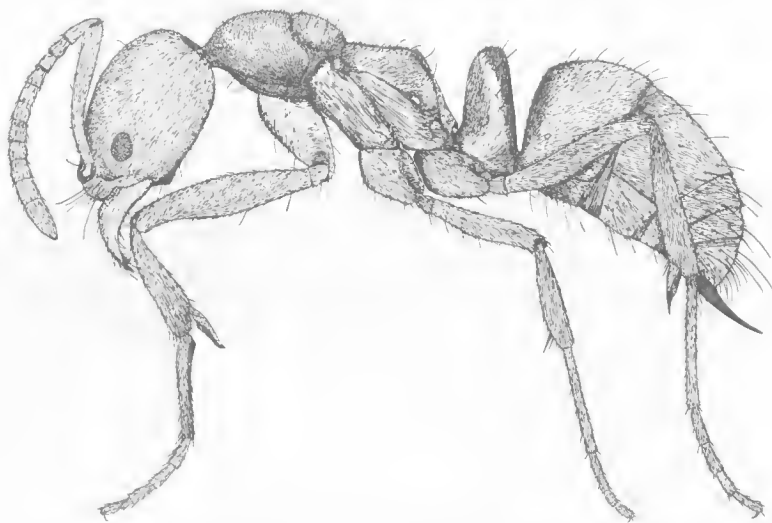


FIG. 1. Lateral view of a worker of *Euponera (B.) solitaria* (F. Smith.)
Drawn by Mrs. S. H. DeBord.

their greatest diameter from the base of the mandibles. Antennal scapes robust, reaching beyond the posterior corners of the head. Mandibles prominent, subtriangular, flattened dorsoventrally, each bearing 6 or 7 rather prominent teeth apically and several less prominent teeth basally. In profile the pronotum and mesonotum appear convex, with the mesonotum gibbous or protuberant because of the circular suture surrounding it; base of the epinotum extending almost horizontally from the mesonotum and meeting its declivity in a well rounded, obtuse angle, the lateral margins of which are rather sharp and well defined. Middle and posterior legs each with two tibial spurs. Petiole unusually large, erect, convex anteriorly and flattened posteriorly, with rounded, entire, superior border; ventrally with a well defined process, the acute point of which is directed posteriorly. Gaster, when viewed dorsally with the first two segments, occupying the greater portion of the surface; sting well defined.

Fore coxae, mesopleura and metapleura, and posterior surface of petiole, smooth and shining; remainder of body more or less subopaque.

Body, except the portions mentioned above, covered with a dense, closely appressed pubescence, which in certain lights gives it a slightly metallic or bronzed luster. Hairs light yellowish, long, moderately abundant, especially noticeable on the anterior portion and ventral surface of head, on the pronotum, fore coxae, and tibiae, and over all of gaster.

Body black; mandibles, antennal funiculi, legs, and pygidium reddish brown.

I have redescribed *E. solitaria* from several worker specimens taken by Mr. H. T. Vanderford at Decatur, Ga. Dr. W. M. Wheeler, who confirmed my identification of the ants, remarked as follows concerning them:

"I have a long series of *Euponera solitaria* from Japan and your specimens agree very closely, except that the legs and mesopleurae are somewhat paler. I should, however, identify your specimens as *Euponera solitaria* F. Smith."

The most striking characteristics of this species are: (1) the very protuberant mesonotum, which is completely encircled by a deep suture, (2) the long antennal scapes, which clearly surpass the posterior border of the head, (3) the rather large compound eyes, (4) the absence of bristles on the metatarsi of the mesothoracic legs, and (5) the smooth and shining mesopleura and metapleura.

This ant, which is common to Japan and China and probably some of the adjacent regions, has been found by Mr. Vanderford in the following localities in this country: Decatur, Ga.; Wilmington, Newbern, Washington, and Elizabeth City, N. C.; Norfolk, Petersburg, and Richmond, Va.

In those towns located on the coast the ants were usually found in the vicinity of the docks or very close by. At Washington, N. C., however, the ants occurred over the entire town and this was almost true of them at Norfolk also.

According to Mr. Vanderford, the ants form small colonies in rotten logs or in the soil beneath stones, logs, debris, etc. He states that the workers do not seem to forage as much on bright days as on cloudy days, and that the ants seem to like dark, damp places. On numerous occasions he found workers feeding on dead insects, fish scraps, and even the juices of decayed fruits lying on the ground. In one locality the inhabitants claimed that persons were occasionally stung by

these ants. On August 27, 1932, winged queens and winged males were found in nests at Norfolk, Va., by Mr. Vanderford.

***Euponera* (*Trachymesopus*) *gilva* (Roger)**

Ponera gilva Roger. Berlin Ent. Zeitschr. 5, 1863, p. 170, worker; Mayr, Verh. Zool.-Bot. Ges. Wien 36, 1886, p. 438, worker; Dalla Torre, Catal. Hymen. 7, 1893, p. 39, workers; Emery, Zool. Jahrb., Abth. Syst. 8, 1895, p. 266, Pl. 8, Fig. 10, worker; Wheeler, Ants, etc., 1910, p. 561, worker.

Pachycondyla (*Pseudoponera*) *gilva* Emery. Ann. Soc. Ent. Belg. 45, 1901, p. 46, worker.

Euponera (*Trachymesopus*) *gilva* Emery. Genera Insect., Ponerinae, 1910, p. 86, worker; Wheeler and Gaige, Psyche 27, 1920, pp. 69-72, worker; Creighton and Tulloch, Psyche 37, 1930, pp. 70-79, worker, queen, male.

Euponera (*Trachymesopus*) *gilva* subsp. *harnedi* Smith. Ann. Ent. Soc. Amer. 22, 1929, pp. 543-545, worker.

Worker—Length, 3 to 3.4 mm. "Head shaped as in *Ponera coarctata*, slightly longer than broad, somewhat broader behind than in front, with feebly convex sides and nearly straight posterior border. Eyes very small, distinctly larger, however, than in *E. ochracea*, *sauteri* or *darwini*, at the anterior sixth of the sides of the head. Mandibles rather convex, with 6-7 distinct teeth, the apical somewhat coarser than the basal. Clypeus short, high and carinate in the middle, especially behind, depressed on the sides, with broadly rounded, entire anterior border. Frontal carinae small, flattened, together forming a cordiform plate, divided by a narrow, impressed, longitudinal line, which runs back on to the head as far as the vertex in the form of a frontal groove. Antennal scapes not reaching the posterior border of the head by a distance somewhat greater than their greatest diameter; funiculi slender at the base and enlarged at the tip, all the joints, except the first and last, distinctly broader than long; last joint nearly as long as the three preceding, which are subequal and form with it an indistinct club. Pronotum as long as broad, somewhat depressed above, with bluntly submarginate sides. Promesonotal and mesoepinotal sutures pronounced, the mesonotum transversely elliptical, as high as the pronotum and feebly convex in profile. Epinotum shorter and narrower than the pro- and mesonotum together, laterally compressed at the base, broader behind, its dorsal outline in profile nearly straight, horizontal, lower than the mesonotum, longer than the declivity into which it passes rather abruptly, the later feebly concave, distinctly marginate on the sides. Petiole from above transversely elliptical, a little broader than the posterior part of the epinotum, the node in profile broad below, a little lower than the epinotum, narrowing upward, with very feebly concave, steeply sloping anterior, flat, vertical posterior and evenly rounded dorsal surface; the ventral surface with a low, rounded projection in the middle. Postpetiole truncated in front, as long as, but distinctly narrower than the first gastric segment. Remaining segments rather small, sting well-developed, curved. Legs stout; middle tibiae and metatarsi short and strongly bristly on their extensor surfaces.

"Mandibles smooth, shining, with a few sparse punctures, mainly near the apical borders and some indistinct striae near the base. Head opaque, very finely and densely punctate, so that it has a velvety texture. Thorax less opaque, especially the epinotum, and the fine punctures, especially of the latter, not so dense. Sides of epinotum, petiole, gaster and legs shining, with very fine and still more distinctly separated punctures.

"Hairs and pubescence golden yellow, both poorly developed on the head, more abundant on the body and legs; the hairs erect, rather fine, moderately long, the pubescence long and rather coarse, not very closely appressed.

"Ferruginous; legs and antennae scarcely paler; head and mandibles a little darker, in some specimens with the occiput slightly infuscated."

The above is a redescription of *E. gilva* as given by Wheeler and Gaige in *Psyche*, Vol. 27, pp. 70-72 (1920). This redescription, which seems to be accurate for my material, is based on the four workers which were collected at Camden, Tenn., by Dr. F. M. Gaige.

The most noticeable characteristics of this species are, (1) the ferruginous color, (2) the short antennal scapes, which do not reach the posterior border of the head, (3) the presence of such fine punctures on the pleura of the epinotum as to give it a glabrous appearance, (4) the extremely small, ocelluslike eyes.

Besides the locality just mentioned, *E. gilva* has been taken at other places as follows: Columbus, Corinth, Longview, Starkville, and Aberdeen, Miss. (M. R. Smith), and Ripley, Miss. (S. W. Simmons); Point Clear and Spring Hill, Ala. (W. S. Creighton); and Montvale Springs near Maryville, Tenn. (C. H. Kennedy).

According to my observations *E. gilva* nests by preference in the moist, woody frass just beneath the bark of pine logs and stumps. Its colonies in some instances contain as many as from one to several hundred workers and often as many as ten or more dealated queens.

The workers are sluggish and slow of movement, often bearing a superficial resemblance to workers of the species of *Proceratium* or *Sysphincta*. The males, on the other hand, are active, wary little creatures that are difficult of capture. Creighton records finding fully developed males and a winged but callow female in a nest in southern Alabama on June 20.

Space will not permit further discussion of the biology of the ant here. For further information on this subject the reader

is referred to Haskins' "Notes on the Biology and Social Life of *Euponera gilva* Roger var. *harnedi* M. R. Smith," (Jour. N. Y. Ent. Soc. 39, pp. 507-521, 1931).

***Euponera* (*Trachymesopus*) *stigma* (Fab.)**

Formica stigma Fabricius. Syst. Piez. 1804, p. 400, queen.

Ponera stigma Roger. Verz. Formic. 1863, p. 16; Emery, Ann. Mus. Civ. Genova 25, 1887, p. 434, worker.

Ponera quadridentata Roger. Berlin Ent. Zeitschr. 4, 1860, p. 285, worker; F. Smith, Jour. Proc. Linn. Soc. Zool. 3, 1858, p. 143, queen.

Ponera americana Mayr. Verh. Zool.-Bot. Ges. Wien 12, 1862, p. 722, worker.

Pachycondyla (*Pseudoponera*) *stigma* Emery. Ann. Soc. Ent. Belg. 45, 1901, p. 46.

Euponera (*Pseudoponera*) *stigma* Forel. Ann. Soc. Ent. Belg. 45, 1901, p. 398; Rev. Suisse Zool. 9, 1901, p. 339.

Euponera (*Trachymesopus*) *stigma* Emery. Genera Insect., Ponerinae, 1910, p. 85.

Worker—Length, 4.5 to 4.75 mm. Head, excluding mandibles, scarcely longer than broad, with convex sides and very feebly emarginate posterior border. Eyes small, but distinct, placed about their greatest diameter from the base of the mandibles. Mandibles prominent, subtriangular, with six well developed teeth, all of which are of about equal size, except the first. Clypeus carinate medianly, and with broadly rounded, entire, anterior border. Frontal carinae forming flat, horizontal, rather semicircular laminae, which cover the base of each antennal scape. A faint, frontal furrow or impression extends from the carinae to about half the distance to the posterior border of the head, where it becomes obsolete. Antennal scapes robust, incrassated distally, lacking very little, if any, of attaining the median section of the posterior border of the head. Pronotum and mesonotum in lateral profile very faintly convex. Pro-mesonotal and meso-epinotal sutures distinct. Epinotum shorter and narrower than the pronotum and mesonotum combined, laterally compressed at the base but widening very perceptibly posteriorly; in lateral profile with a convex base which passes into the declivity in a broadly rounded, obtuse angle; the declivity feebly concave, with marginate sides. Petiole from above transversely elliptical, in lateral profile broad below, narrowing dorsally, with convex anterior and concave posterior surfaces. Gaster bearing a well developed, curved sting. Legs rather stout, metatarsi of middle legs with short, coarse bristles on their anterior surfaces (extensor surfaces).

Head opaque, finely and densely punctate. Thorax with somewhat similar sculpture but apparently more glabrous; the mesopleura and metapleura with fine but distinct longitudinal striae. Mandibles, declivity of epinotum, and posterior surface of petiole smooth and shining. Appendages, petiole, and gaster less shining because of the pubescence and hairs covering them.

Hairs and pubescence yellowish, covering all parts of the insect, thus giving the body a bronzed appearance in certain lights; hairs rather long and sparse, erect or suberect; pubescence fine and dense, closely appressed.

Black; mandibles, clypeus, frontal carinae, and appendages lighter, varying from light brown to a reddish brown. The color rather variable in different individuals, some having, in addition to the color described above, lighter mesonotum, pro-pleura and gaster.

Redescribed by the author from a number of specimens taken in the following localities: Port of Spain, Trinidad; Mina Carlota, Cuba; and Avon Park, Fla.

The most striking characteristics of this species are: (1) its rather short and robust form, (2) its black ground color with lighter areas over other parts of the body, (3) the attainment of the median section of the posterior border of the head by the antennal scapes, and (4) the distinct longitudinal striae on the mesopleura and metapleura.

E. stigma is known to range from South America through Central America and Mexico into the extreme southern part of the United States. The species is also known from Puerto Rico and the Bahamas. However, it has been recorded for the United States from only two localities, both in Florida, namely, Lake Worth (J. Schmitt) and Avon Park (D. E. Read).

I know very little about the habits of this species. Very probably the ants nest in rotten wood or in the soil beneath objects. They are undoubtedly predacious like many of our species of Ponerinae.